REMARKS

In view of the following remarks responsive to the Office Action of July 14, 2004, Applicant respectfully requests favorable reconsideration of this applicant.

Applicant respectfully thanks the Office for re-confirming that claims 9-15 and 19-21 are allowed and that claim 8 is merely objected to for depending upon a rejected base claim, as set forth in the previous Office Action.

The Office has re-asserted the rejections of claims 1-7 and 16-18 based on the same grounds as asserted in the previous Office Action. Particularly, they are rejected under 35 U.S.C. §102(e) as being anticipated by Yeh (U.S. Patent No. 5,995,814). The Office has further set forth responses to Applicant's previous arguments traversing the rejections of claims 1-7 and 16-18.

Claim 1 is an independent claim. Claims 2-7 and 16-18 depend from claim 1.

BACKGROUND

The Present Invention

The present invention relates to a dual band RF tuning circuit in which frequency tuning is performed by selectively switching inductors or capacitors in and out of functional connection with the received signal. This allows many of the same circuit elements to be used in multiple frequency bands without significant performance degradation or increase in the size of the circuit. In accordance with the invention, MESFET transistor switches are used for band selection and are integral with the tuning circuits.

Claim 1 is reproduced below for ease of reference:

1. A dual band RF tuning circuit comprising:
a first impedance element and a second impedance element between an RF input port and an RF output port,

the tuning circuit being tuned by the first and second impedance elements to receive a first RF signal and to provide the first RF signal at the output port,

the tuning circuit being tuned by the first impedance element alone to receive a second RF signal and to provide the second RF signal at the output port,

a switching transistor being switched on and off by changing its bias voltage,

a band control voltage source connected to the switching transistor to change its bias voltage, and

the switching transistor having conducting gates connected to the second impedance element to short the second impedance element, which tunes the tuning circuit by the first impedance element.

With respect to claim 1, the Office asserted that Yeh discloses a first impedance element L1 and a second impedance element L2 between an RF input port IN and an RF output port OUT (as exhibited in Figure 1), the tuning circuit being tuned by the first and second impedance elements L1, L2 to receive a first RF signal and to provide the first RF signal at the output port, the tuning circuit being tuned by the first impedance element alone (which reads on the subset) to receive a second RF signal and to provide the second RF signal at the output port (which reads on column 10, lines 21-25), a switching transistor Q1 being switched on and off by changing its bias voltage, a band control voltage source V1, V2 connected to the switching transistor to change its bias voltage, and the switching transistor Q1 having conducting gates (emitter) connected to the second impedance element L2 to short the second impedance element, which tunes the tuning circuit by the first impedance element L1 (which reads on column 4, lines 32-35).

Applicant previously traversed this rejection arguing that the Office had misinterpreted the circuit of Yeh. Specifically, the Office asserted that the first and second impedance elements of the tuning circuits are L1 and L2. However, as discussed in column 6, lines 1-5 of Yeh, it is L1 and L4 that are part of the input

matching network. L2, on the other hand, provides feedback for improved RF matching and also serves to reduce instabilities (column 4, lines 24-26) and serves no relevant function with respect to input matching. Further, the Office's assertion that Q1 corresponds to the claimed switching transistor is improper. Specifically, as described in column 3, lines 64-66 of Yeh, Q1 is the amplifier, not a switch. There is no switching transistor in Yeh. Yeh discloses a circuit that has narrow band matches for two bands (e.g., 900 MHz and 1.8 GHz). Unlike the present invention, it does not switch between the two bands. Rather, it is a circuit that simply has matches at both of those frequencies (column 5, lines 32-41) and, thus selects the band by means of two always-active filters. Thus, in Yeh, there is no switching in and out of any impedance elements depending on the selected tuning band (let alone impedance elements L1 and L2).

Hence, with reference to claim 1, Yeh does not disclose "a switching transistor being switched on and off by changing its bias voltage" or "the tuning circuit being tuned by the first impedance element alone to receive a second RF signal and to provide the second RF signal at the output port," or "the switching transistor having conducting gates connected to the second impedance element to short the second impedance element, which tunes the tuning circuit by the first impedance element."

The Present (Final) Office Action

Responding to the above arguments, the Office asserts that the arguments are not persuasive because Yeh discloses at column 4, lines 32-37 "the capacitor C3 serves as a bypass capacitor, to shunt the emitter of Q1 to ground potential at RF frequencies such that the emitter biasing resistor R1 will not degrade the high-

frequency transistor gain". The Examiner contends that this section reads on switching because shunting the emitter causes the signal to take a different path, which is switching.

Applicant respectfully traverses. Regardless of whether the shunting operation of capacitor C3 reads on switching, it clearly does not read on the type of switching claimed in claim 1. First and foremost, in the main body of the rejection in the present Office Action as well as the previous Office Action , the Office asserts that transistor Q1 is the "switch". However, in the response to Applicant's arguments, the Office is asserting that an entirely different element, capacitor C3, is the switch. This results in several problems with the rejection. First, the rejection is confusing because the main body of the rejection is inconsistent with its further explanation in the response to Applicant's arguments. Secondly, claim 1 recites "a switching transistor being switched on and off by changing its bias voltage". Obviously, even if capacitor C3 is deemed a switch, it is not a transistor switch, as claimed. Even further, neither transistor Q1 nor capacitor C3 is "switched on and off by changing its bias voltage", as claimed.

While the above-noted distinctions clearly are significant distinctions of the claims over the asserted prior art with respect to patentability, they are merely the tip of the iceberg. Shunting the emitter of amplifier Q1 to ground for all RF signals is completely unrelated to the switching between two RF bands that is the subject of claim 1. Claim 1 recites that the switching transistor is used to selectively short out one of the impedances, which is how the circuit switches between the two RF bands. Particularly, the circuit tunes to one of the RF bands using the combined impedances of the first and second impedance elements and tunes to the other RF

band using the impedance of just one of the impedance elements. Shunting the emitter of the amplifier transistor Q1 to ground for all RF signals has nothing to do with this. As noted in the response to the previous Office Action, Yeh operates on a completely different principle than the present invention. Yeh does not switch circuitry in and out of functional connection with the input signal depending on the band that must be tuned. Yeh simply provides a circuit that always has two narrow band filters operating, one for each RF band.

In view of the foregoing amendments and remarks, this application is now in condition for allowance. Applicant respectfully requests the Examiner to issue a Notice of Allowance at the earliest possible date. The Examiner is invited to contact Applicant's undersigned counsel by telephone call in order to further the prosecution of this case in any way.

Respectfully submitted,

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